

WHAT IS CLAIMED IS:

1. A process for producing a display comprising the steps of:
forming a crystalline semiconductor film by a process comprising:
a semiconductor film deposition process in which a
5 semiconductor film is deposited on a substrate,
a first annealing process in which said semiconductor film is
crystallized by repeatedly performing a process that melt crystallizes a portion of said
semiconductor film, and
a second annealing process in which rapid thermal annealing is
10 performed on said crystallized semiconductor film,
wherein an annealing temperature in the second annealing
process is expressed by the absolute temperature T and, when the annealing time is t,
expressed in seconds, annealing temperature T and annealing time t satisfy the
relationship:
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$$1.72 \times 10^{-21} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 4.63 \times 10^{-14} \text{ sec}$$
wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$; and
forming a panel equipped with a device using the semiconductor film.
2. A process for producing a display according to claim 1, wherein an
annealing temperature in the second annealing process is expressed by the absolute
20 temperature T and, when the annealing time is t, expressed in seconds, annealing
temperature T and annealing time t satisfy the relationship:

$$5 \times 10^{-18} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 4.63 \times 10^{-14} \text{ sec}$$
wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$.
3. A process for producing a display according to claim 1, wherein an
annealing temperature in the second annealing process is expressed by the absolute
25 temperature T and, when the annealing time is t, expressed in seconds, annealing
temperature T and annealing time t satisfy the relationship:

$$1.72 \times 10^{-21} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 1.09 \times 10^{-15} \text{ sec}$$
wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$.
- 30 4. A process for producing a display according to claim 1, wherein an
annealing temperature in the second annealing process is expressed by the absolute
temperature T and, when the annealing time is t, expressed in seconds, annealing
temperature T and annealing time t satisfy the relationship:

$$5 \times 10^{-18} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 1.09 \times 10^{-15} \text{ sec}$$

wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$.

5. A process for producing a display according to claim 3, wherein said substrate is glass and said annealing temperature T is below a strain point of said glass substrate.

6. A process for producing a display according to claim 1, wherein said annealing time t is 300 seconds.

7. A process for producing a display according to claim 1, wherein said annealing time t is 180 seconds or less.

8. A process for producing an electronic device comprising the steps of:
forming a crystalline semiconductor film by a process comprising:

a semiconductor film deposition process in which a semiconductor film is deposited on a substrate,

a first annealing process in which said semiconductor film is crystallized by repeatedly performing a process that melt crystallizes a portion of said semiconductor film, and

a second annealing process in which rapid thermal annealing is performed on said crystallized semiconductor film,

wherein an annealing temperature in the second annealing process is expressed by the absolute temperature T and, when the annealing time is t, expressed in seconds, annealing temperature T and annealing time t satisfy the relationship:

$$1.72 \times 10^{-21} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 4.63 \times 10^{-14} \text{ sec}$$

wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$;

forming a panel equipped with a device using the semiconductor film;
and

installing the panel in a body of an electronic device.

9. A process for producing an electronic device according to claim 8, wherein an annealing temperature in the second annealing process is expressed by the absolute temperature T and, when the annealing time is t, expressed in seconds, annealing temperature T and annealing time t satisfy the relationship:

$$5 \times 10^{-18} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 4.63 \times 10^{-14} \text{ sec}$$

wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$.

10. A process for producing an electronic device according to claim 8, wherein an annealing temperature in the second annealing process is expressed by the absolute temperature T and, when the annealing time is t, expressed in seconds, annealing temperature T and annealing time t satisfy the relationship:

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$$1.72 \times 10^{-21} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 1.09 \times 10^{-15} \text{ sec}$$

wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$.

11. A process for producing an electronic device according to claim 8, wherein an annealing temperature in the second annealing process is expressed by the absolute temperature T and, when the annealing time is t, expressed in seconds,
10 annealing temperature T and annealing time t satisfy the relationship:

$$5 \times 10^{-18} \text{ sec} < t \cdot \exp(-\epsilon/kT) < 1.09 \times 10^{-15} \text{ sec}$$

wherein $\epsilon = 3.01 \text{ eV}$ and $k = 8.617 \times 10^{-5} \text{ eV/K}$.

12. A process for producing an electronic device according to claim 10,
15 wherein said substrate is glass and said annealing temperature T is below a strain point of said glass substrate.

13. A process for producing an electronic device according to claim 8, wherein said annealing time t is 300 seconds.

14. A process for producing an electronic device according to claim 8,
20 wherein said annealing time t is 180 seconds or less.

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